

## 研究生入學能力考試試題(範例)

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### 閱讀測驗與英翻中樣題

#### 樣題 1

The new airplanes have bigger seats, larger window, more space for luggage and more comfortable. They are also benefit to the environment. By using less fuel, they will create less air pollution. Airline companies are excited but scientists wonder if the airplane engineers could do even more.

The secret to use less fuel is the less weight of the airplane. The new planes are made of light materials, such as carbon fiber, a very light but strong plastic. Although the saving of the fuel, some people are still not satisfied. They said it should go further than that. Transport experts also hope that airplanes should use more biofuel which is made from plants like corn or sugarcane. They believe that the use of biofuel will produce less air pollution.

Please translate the first paragraph into Chinese

Based on the article, please answer following questions (single answer):

1. The new airplanes can carry more
  - (1) Luggage,
  - (2) Passenger,
  - (3) Fuel,
  - (4) Window.
2. Carbon fiber is good because it
  - (1) Cost more than metals,
  - (2) Be brittle than metals,
  - (3) Reduce weight of the airplane,
  - (4) Make larger window.
3. Who are not happy with the new airplanes?
  - (1) Airplane engineers,
  - (2) Airline company,
  - (3) Transport expert,
  - (4) Passenger.

#### 樣題 2

When the Sun and Moon are rising or setting, both of them looks larger, although

the distance they are from the earth is not different. This perceptual phenomenon, known as “Moon illusion,” has been studied over the years. Various explanations, including the muscle strain for the person looking up and the comparison of the Moon with other things on the horizon that make it appear larger, have been disputed by scientist, but thus far there is no widely accepted explanation of the phenomenon.

Please translate into Chinese

Based on the article, please answer following questions (single answer):

1. The Moon illusion of the Sun and the Moon can be observed at
  - (1) Night,
  - (2) Dawn and dusk,
  - (3) Mid-day,
  - (4) Mid-night.
2. According to the message, we can estimate that a star seen on the horizon would seem
  - (1) Extremely small,
  - (2) Smaller than usual,
  - (3) More huge than when it were overhead,
  - (4) To reflect more of the Sun’s light.
3. According to the message, the true cause of the “Moon illusion” is
  - (1) Rarely disputed,
  - (2) Different case by case,
  - (3) Well know,
  - (4) Still under study.

### 樣題 3

Mechanical engineers are associated with the production and processing of energy and with providing the means of production, the tools of transportation, and the techniques of automation. The skill and knowledge base are extensive. Among the disciplinary based are mechanics of solids and fluids, mass and momentum transport, manufacturing processes, and electrical and information theory.

A gear train involves mechanics, strength of material, friction, fluid dynamics, heat transfer, material selection, material surface treatment, manufacturing, inspection, statistical analysis, and so on. Internal combustion engine and jet engine involve even more science and technology, such as thermodynamics, vibration, elasticity, combustion, control, sound, aero-dynamics, and stability. Mechanical engineering design involves all the

disciplines of mechanical engineering.

Please translate the first paragraph into Chinese

Based on the article, please answer following questions (single answer):

1. What is not in the scope of mechanical engineering?
  - (1) Design a machine to produce things,
  - (2) Make tools of transportation,
  - (3) Develop automation technique,
  - (4) Develop information security in the internet world.
2. Mechanical engineers sometimes are responsible for system integration. Which is not a correct statement?
  - (1) Mechanical engineers have extensive knowledge across discipline,
  - (2) Mechanical engineers have broad expertise in mechanics, control, electrical and information technology,
  - (3) Mechanical engineers have expertise in thermal science and chemical engineering,
  - (4) Mechanical engineers may have skill to develop hard disk drive and DVD player.
3. In the following, which two subjects are properly related?
  - (1) Heat transfer and elasticity,
  - (2) Vibration and sound,
  - (3) Thermodynamics and friction,
  - (4) Fluid dynamics and material surface treatment.

#### 樣題 4

The outstanding characteristics of aluminum and its alloys are their strength-weight ratio, their resistance to corrosion, and their high thermal and electrical conductivity. The density of aluminum is about  $2770 \text{ kg/cm}^3$ , compared with  $7750 \text{ kg/cm}^3$  for steel. Pure aluminum has a tensile strength of about 90 MPa, but this can be improved considerably by cold working and also by alloying with other materials. The modulus of elasticity of aluminum, as well as of its alloys, is 71.7 GPa, which means that it has about one-third the stiffness of steel.

Considering the cost and strength of aluminum and its alloys, they are among the most versatile materials from the standpoint of fabrication. Aluminum can be processed by sanding casting, die casting, hot or cold working, or extruding. Its alloys can be machined, press-worked, soldered, brazed, or welded. Pure aluminum melts at 660 degrees which makes it very

desirable for the production of either permanent or sand mold castings. It is commercially available in the form of plate, bar, sheet, foil, rod, and tube and in structural and extruded shapes.

Please translate the first paragraph into Chinese

Based on the article, please answer following questions (single answer):

1. The alloy of aluminum can be made to improve mainly the property of
  - (1) Modulus of elasticity,
  - (2) Density,
  - (3) Strength-weight ratio,
  - (4) Cold working.
2. Comparing the strength-weight ratio (SWR) of aluminum with that of steel, what is the correct statement?
  - (1) Aluminum SWR is about one-third of steel SWR,
  - (2) Aluminum SWR is about one-half of steel SWR,
  - (3) Aluminum SWR is about same as steel SWR,
  - (4) Difficult to compare.
3. The reason of aluminum can be commercially available in many different shapes is that
  - (1) Its modulus of elasticity is relatively low,
  - (2) Its density is relatively low,
  - (3) Its melting point is relatively low,
  - (4) Its cost is relatively low.

## 樣題 5

The mechanical properties are those that indicate how the material is expected to behave when subjected to varying conditions of load and environment. These characteristics are determined by standardized destructive and non-destructive test methods.

An elastic material returns to its original dimensions on removal of applied loads. This elastic property is called elasticity. Usually the elastic range includes a region throughout which stress and strain have a linear relationship. The elastic portion ends a point called the proportional limit. Such materials are linearly elastic. In a viscoelastic solid, the state of stress is function not only of the strain but the time rate of change of stress and strain as well. A plastically deformed member does not return to its initial size and shape when the load is removed.

Please translate the first paragraph into Chinese

Based on the article, please answer following questions (single answer):

1. When the stress of an elastic material does not exceed its proportional limit, what is expected to happen?
  - (1) The strain does not exceed the elasticity,
  - (2) The length change of the material does not exceed its strain limit,
  - (3) The size of the material does not change when the load is released,
  - (4) The elastic portion exceeds the proportional limit.
2. Compare the elastically deformed material and plastically deformed material?
  - (1) The stress changes linearly with the strain changes in elastic material,
  - (2) The stress and strain have a non-linear relationship in elastic material,
  - (3) The length of plastic material is not changed when the load is released,
  - (4) The stress in elastic material changes when time changes.

## 樣題 6

Gears are used to transmit torque, rotary motion and power from one shaft to another. They have a long history. In about 2600 B.C., the Chinese used primitive gearsets, most likely made of wood, their teeth merely pegs inserted in wheel. In the 15<sup>th</sup> century A.D., Leonardo da Vinci showed many gear arrangements in his drawings. Presently, a wide variety of gears types have been developed that operate quietly and with very low friction losses. Smooth, low vibration action is secured by giving the proper geometric form to the outline of the teeth.

Compared to various other means of power transmission (e. g., belts and chains), gears are the most rugged and durable. They have transmission efficiency as high as 98%. However, gears are generally more costly than belts and chains.

Please translate the first paragraph into Chinese

Based on the article, please answer following questions (single answer):

1. The reason that gears are often used to transmit the power includes
  - (1) Being used by ancient Chinese,
  - (2) Reliable behavior,
  - (3) Easy to use,
  - (4) Can use wood.
2. Are gears better than belts and chains?
  - (1) Gears are quieter,
  - (2) Gear transmission is smooth,
  - (3) Gears transmission is efficient,

(4) All above are correct.

## 樣題 7

If you haven't been to Kaohsiung in a few years, then the city that would now welcome you may seem unrecognizable. The place that residents said used to be like a "heavy" industrial kitchen full of oily smoke," has recently been named by Commonwealth magazine as a top spot for environmental protection.

Much of Kaohsiung's green facelift revolves around the Love River and its green spaces. The restoration of the river included improving the city's sewage system, as well as getting rid of some of the pollutants in the water. In turn, this has completely changed the face of the city, as the river now provides a popular focal point for locals and tourists alike, with bicycle paths and spaces for public art. Furthermore, Kaohsiung's urban-renewal plan has brought greenery to the city, with lots of trees being planted. In fact, over the last three years, the city government has created 766 hectares of parks, partly due to restoring unused plots of land throughout the city. That's equal to about 29 parks the size of Da-an Forest Park in Taipei. It seems that Kaohsiung is now set to lead the country in much more than heavy industry.

Please translate the first paragraph into Chinese

Based on the article, please answer following questions (single answer):

1. According to the writer, what has been done to clean the river?
  - (1) Sewage system has been improved,
  - (2) The majority of factories have been closed,
  - (3) The nearby buildings have been cleaned,
  - (4) The water has had pollutants added.
2. What is NOT a way in which the city has become greener?
  - (1) Parks have been created in the city,
  - (2) Unused land has been converted,
  - (3) Cars have been limited in the city,
  - (4) Many new trees have been planted.
3. What is the best description of this article?
  - (1) Editor's comments in a nature journal,
  - (2) An entry in a travel guide,
  - (3) A scientific research paper,
  - (4) A feature article of national interest.

## 樣題 8

Just over a year ago, it seemed that whole world was excited by the election of US President Obama. However, the announcement involving him this October was met with a more muted response. That was when he was named the winner of the 2009 Nobel Peace Prize.

The Peace Prize is one of the five awards set up by famous chemist Alfred Nobel in his will in 1895. The Peace Prize is meant for the person who, in the previous year, has done the most to promote good relations between nations, with previous winners including the founder of the Red Cross and the Dalai Lama. However, when Obama's win was announced, many baffled members of the public media and celebrity circles asked, "Why?" In his first year in office has he really done anything truly noteworthy? Especially since the deadline for prize nominations was just weeks after he was sworn in as president.

The Nobel authorities have defended the decision, saying that rarely has a person "captured the world's attention and given its people hope for a better future" in the same way. So, has Obama been awarded the prize for what the world hopes he'll do? Perhaps he now has even more to live up to.

Please translate the last paragraph into Chinese

Based on the article, please answer following questions (single answer):

1. What event of 2009 is the article mainly about?
  - (1) The election of the new president of the US,
  - (2) The announcement of the Nobel Prize winner,
  - (3) The founding of an award for peace,
  - (4) The anniversary of Alfred Nobel's death.
2. The word "baffled" in paragraph two is closest in meaning to which word?
  - (1) Confused,
  - (2) Ordinary,
  - (3) Uninterested,
  - (4) Convinced.
3. What reason has the Nobel committee given for its decision concerning Obama?
  - (1) He has captured men who were against world peace,
  - (2) He is a rare person who will definitely do great things,
  - (3) He has made great changes to the world this year,
  - (4) He has grabbed people's attention and offered them hope.

## 樣題 9

Due to the Chinese practice of tomb burials as early as 4000-3000 BC, Chinese potter was making useful wares of great beauty for the dead. During the Tang dynasty (about the 7<sup>th</sup> century to the 10<sup>th</sup> century) many tomb figures of this kind were still produced, but decorated with greens, blues, yellows and rich browns. It was at this time also, that refined stone wares replaced the coarser earthenware. This led to the production of a white-bodied ware. Unlike the wares in the late Southern Song, the wares in the Tang dynasty have no delicately incised or molded decoration, but decorated with lead-glazes stained.

Please translate into Chinese

Based on the article, please answer following questions (single answer):

1. What is the best title for this passage?
  - (1) The wares of China's Han-song dynasties,
  - (2) The comparison of wares of the tang and song dynasties,
  - (3) The tomb decoration in the tang dynasty,
  - (4) The wares of the tang dynasty.
2. From this passage, when did the Chinese start to bury wares with the dead?
  - (1) From the Song dynasty,
  - (2) Probably as early as 4000 BC,
  - (3) Started in Tang dynasty,
  - (4) From the 7<sup>th</sup> century to the 10<sup>th</sup> century.
3. According to the author, what's the distinguishing of the late Southern Song Wares?
  - (1) They are decorated with yellow and rich brown,
  - (2) They look like white-bodied,
  - (3) They painted with lead-glazes stained,
  - (4) They are finely incised.

## 樣題 10

Canada is bounded by oceans to the east, west and north, while America lies to the south. The country has a mixture of geographical features, ranging from high mountains, wide plains and frozen tundra, to large forests, rolling grasslands and fertile lowlands. There are ten provinces and three territories in Canada. The newest territory, Nunavut, is one-fifth the size of Canada and has a population of only 30,000 people. Most of them are aboriginal citizens called Inuit.

The population of Canada as a whole is over 30 million and is made up of

many different origins, including Europeans, Africans and Asians. The reason for this is that Canada, like America, was colonized and populated by large numbers of immigrants.

The province of Quebec differs greatly from the rest of Canada because of its French language and culture. Today, about 80 percent of Quebec's people are of French descent. French is the official language of Quebec, and most of the people in the province belong to the Roman Catholic Church. Nevertheless, the people of Quebec share the same basic values, such as democracy and individual freedom, as their fellow citizens in the larger Canadian unions.

Please translate the first paragraph into Chinese

Based on the article, please answer following questions (single answer):

1. Which word best describes the geography and population of Canada?
  - (1) Uniform,
  - (2) Violent,
  - (3) Unstable,
  - (4) Varied.
2. In which way are Canada and America comparable?
  - (1) They both are completely surrounded by oceans,
  - (2) They both have large immigrant populations,
  - (3) They both are made up of ten provinces,
  - (4) They both have few residents from overseas.
3. What makes Quebec so different from the rest of Canada?
  - (1) The people's basic values,
  - (2) Its language and culture,
  - (3) The people's lack of freedom,
  - (4) Its industry and trade.